Fuel Efficiency of Road Passenger Vehicles: Energy Security and Co-Benefits Analysis for India

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Fuel Efficiency of Road Passenger Vehicles: Energy Security and Co-Benefits Analysis for India

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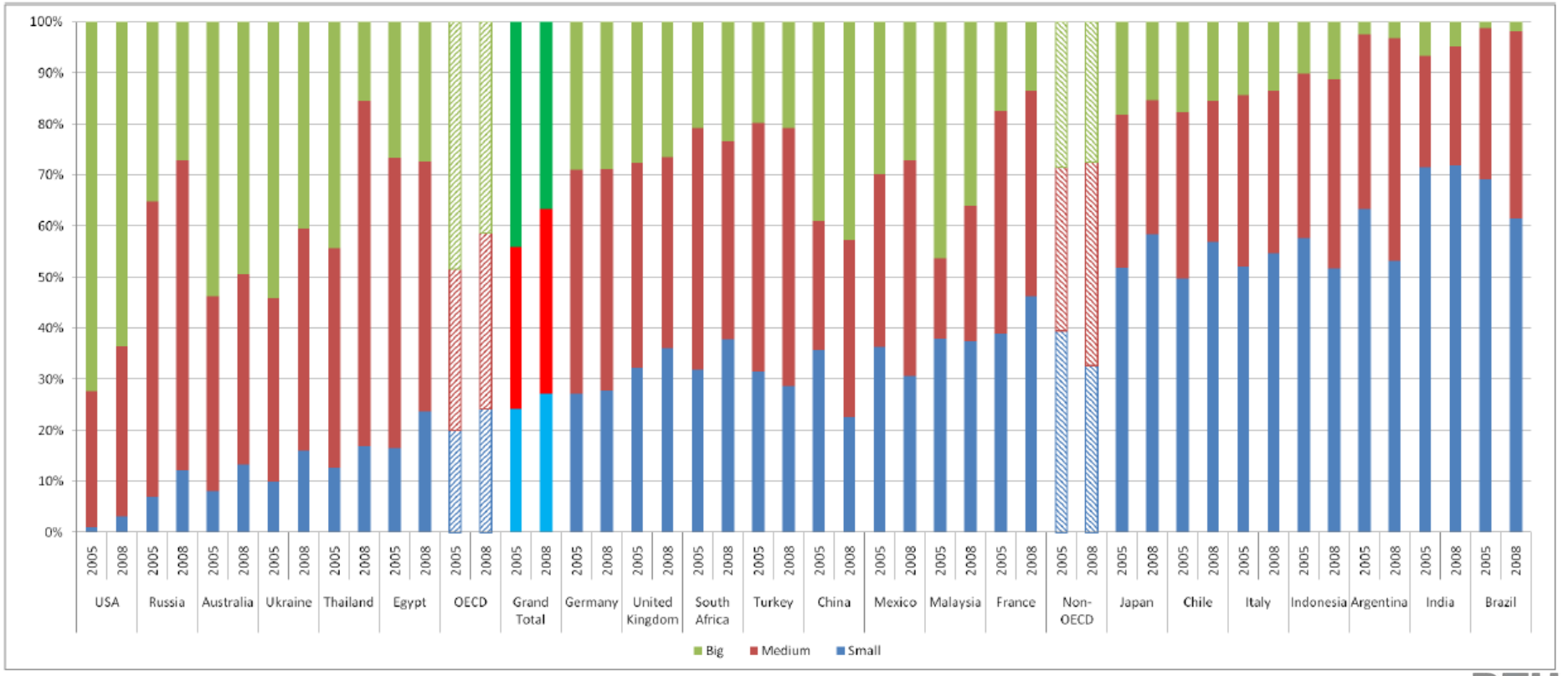
Market segmentation for cars – Cross Country

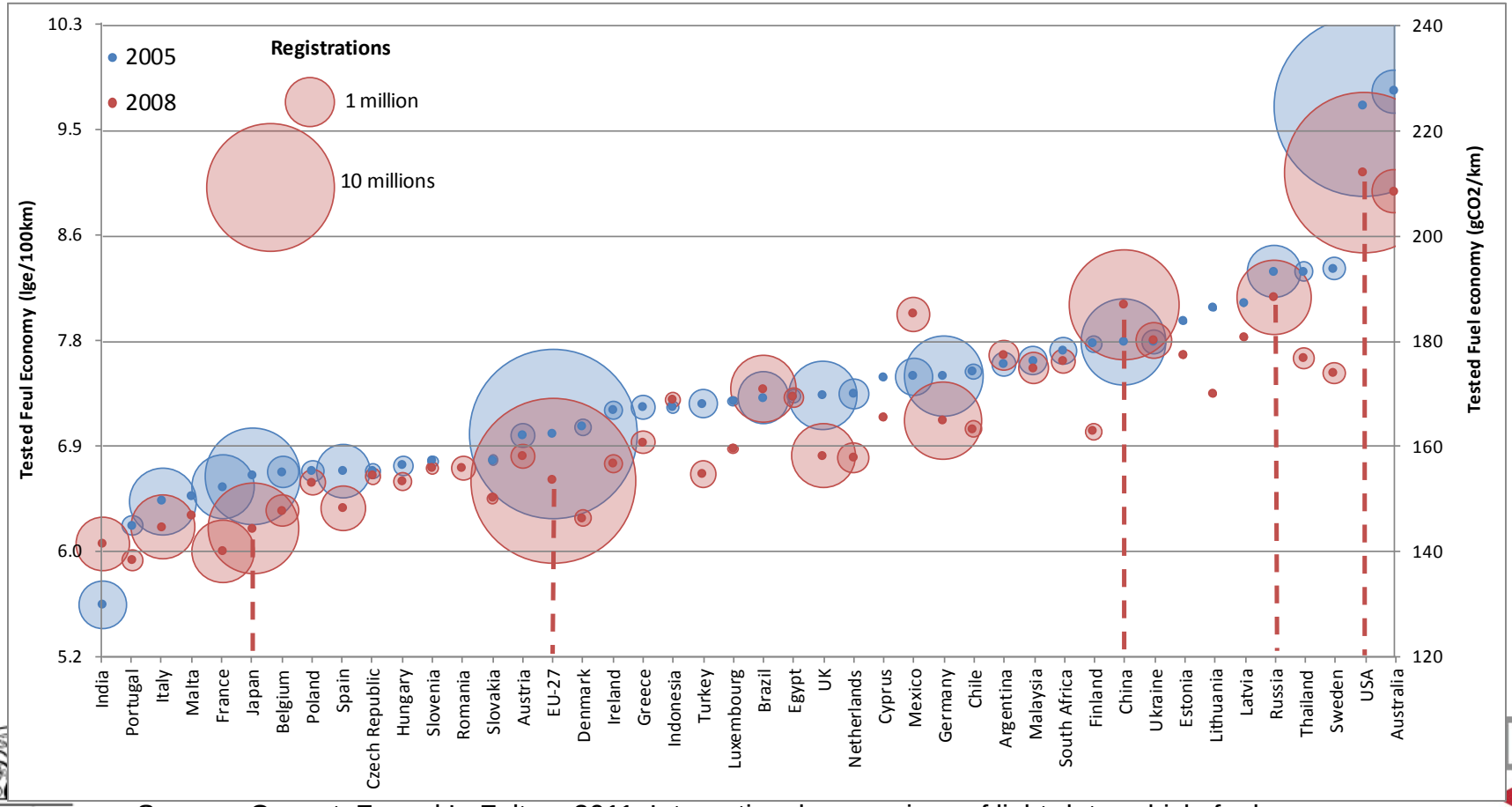
- India has highest share of small cars
- However share of medium size cars growing the fastest



Source : Cuenot, F., and L. Fulton. 2011. International comparison of light-duty vehicle fuel economy and related characteristics. OECD/IEA, Paris.

Average Fuel Economy – Cross Country

- Shift in vehicle size reducing fuel economy



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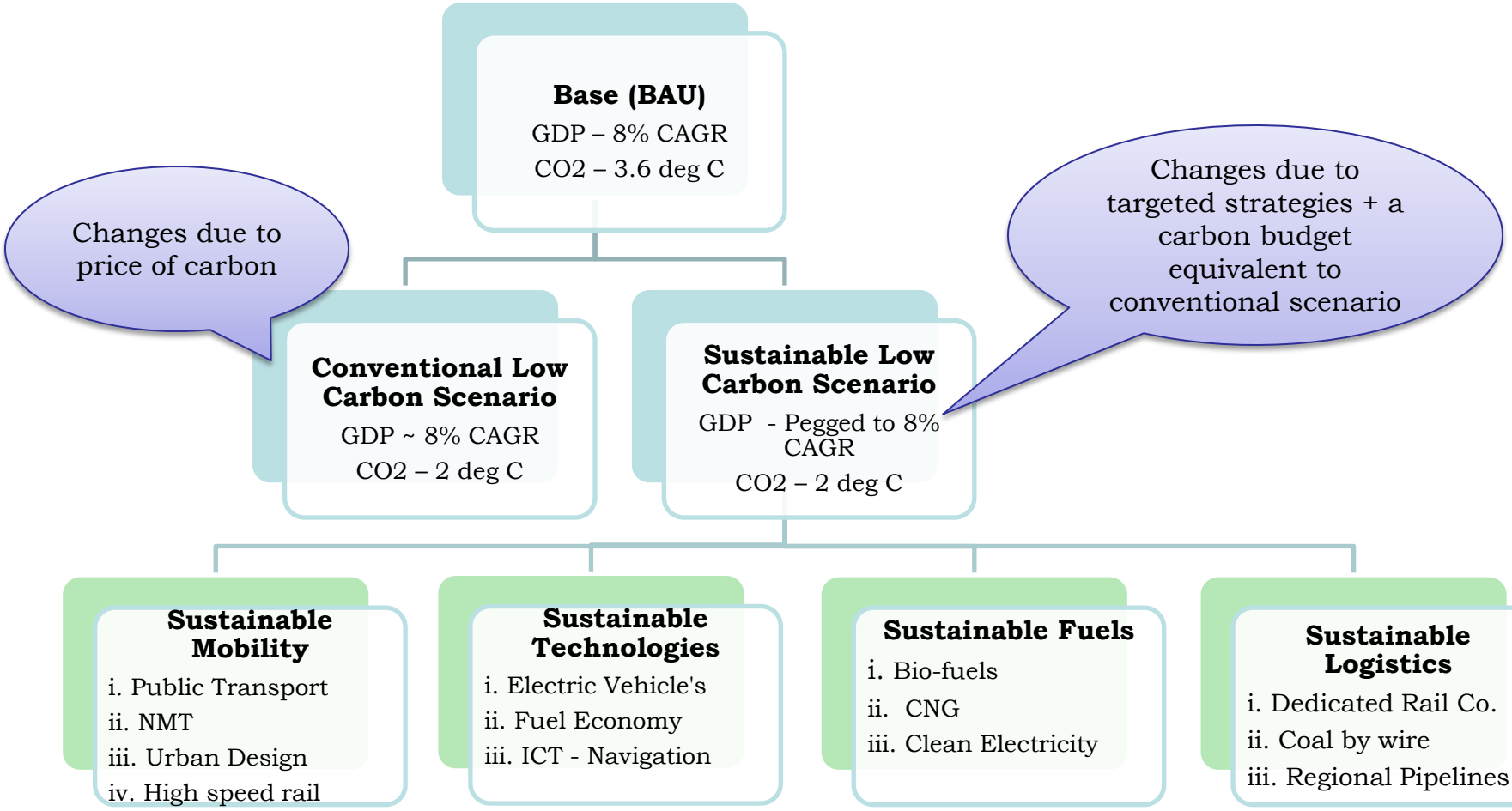
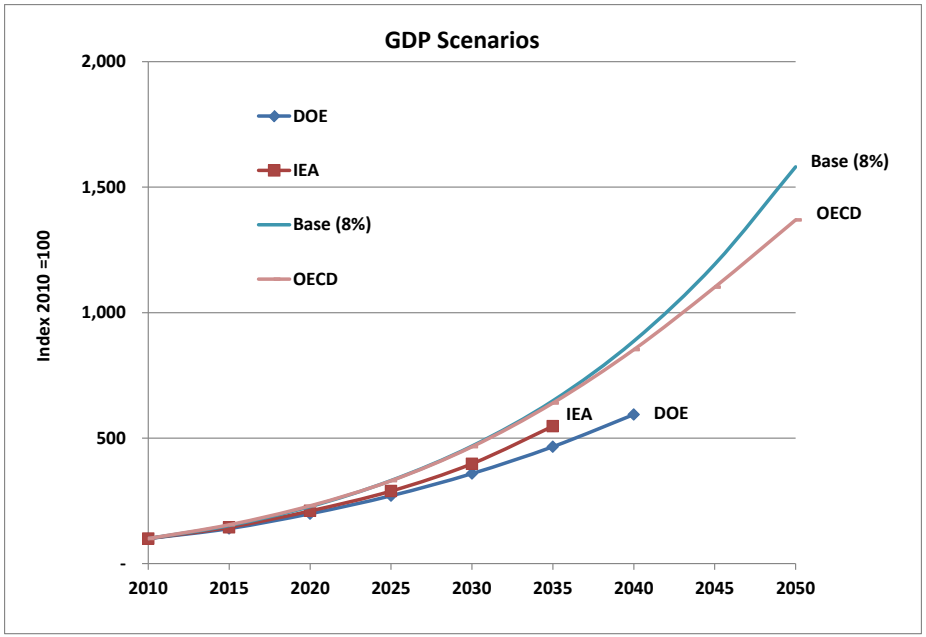
Fuel Economy Initiative in India

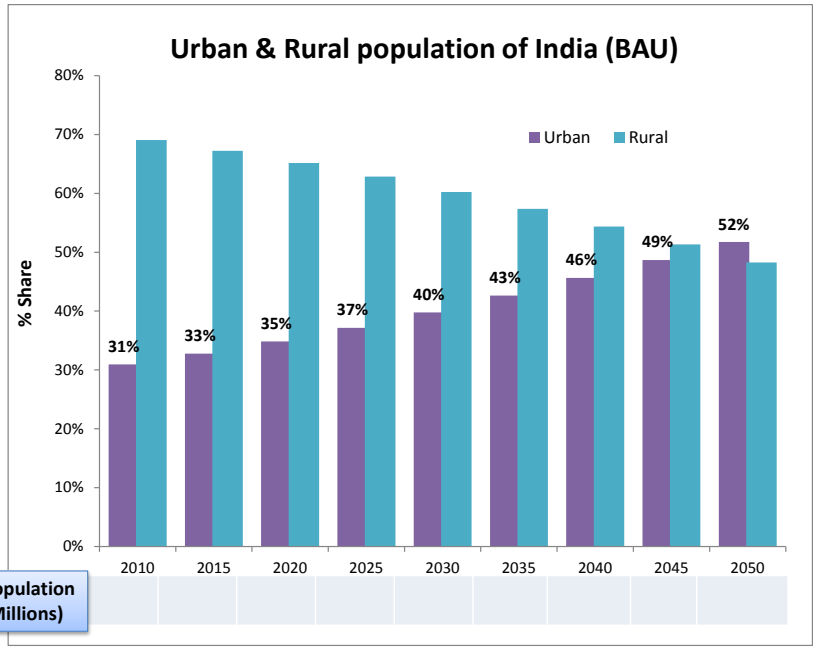
- BEE Consultation Paper, October 2011 :
  - Comments received from stakeholders SIAM, and NGO's CSE, Prayas, IEA, etc.
  - Approval by PMO, August 2012
  - **5 Star labelling** based on weight of cars
  - Expected start 2017 (??)
  - Considered a part of BAU

Architecture for Transport Scenarios

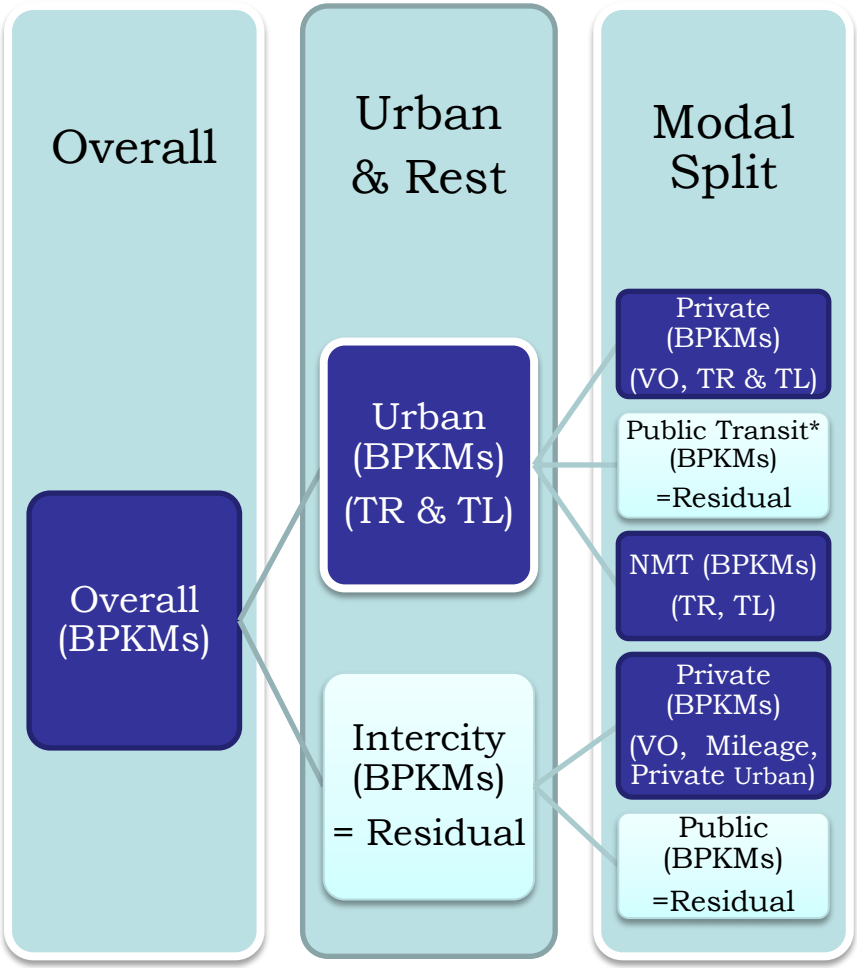


Macro-economic drivers

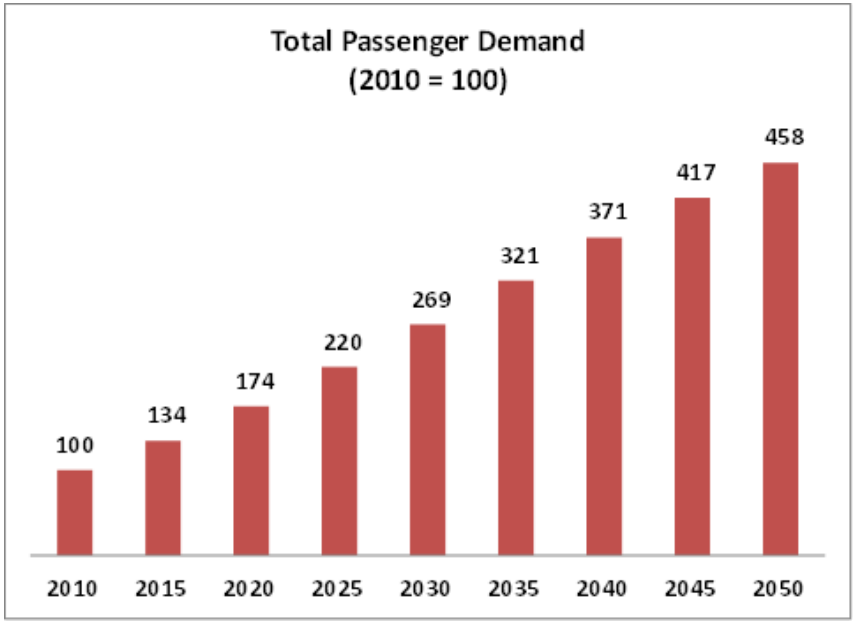


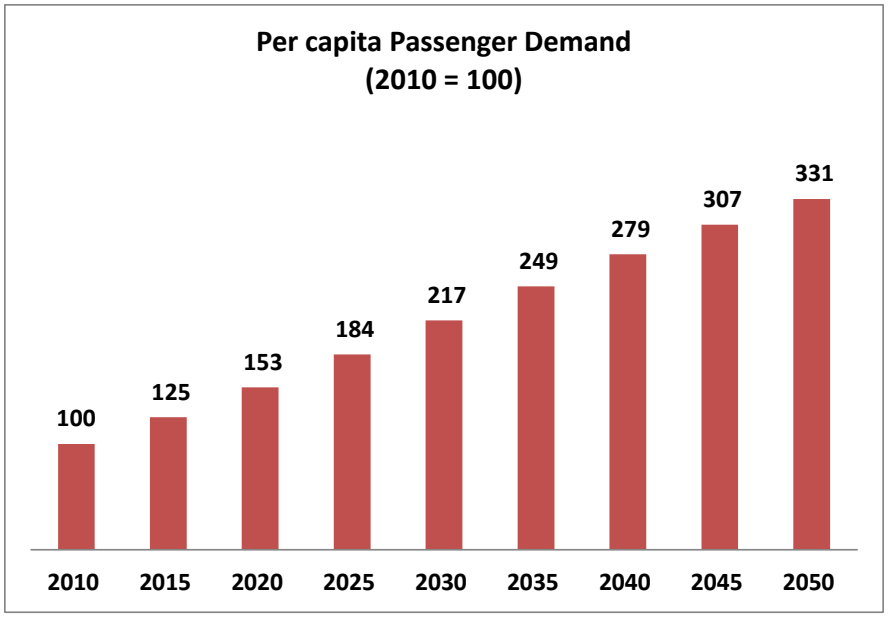


Passenger Demand Estimation

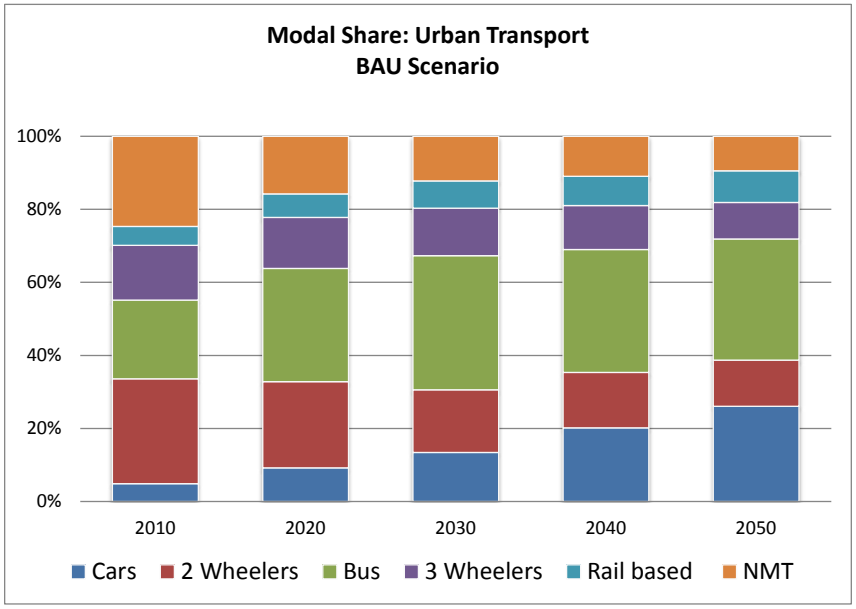


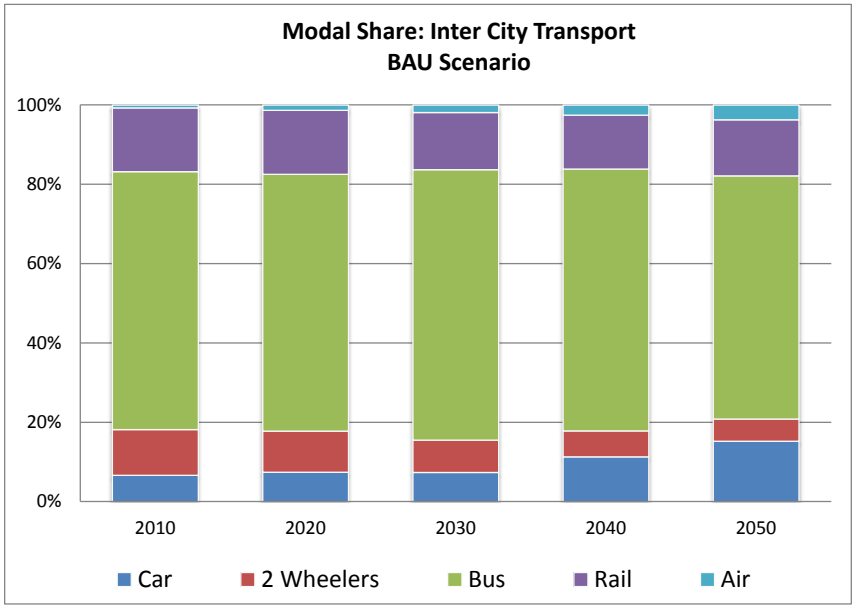
Increase in Passenger Demand





Modal Shares



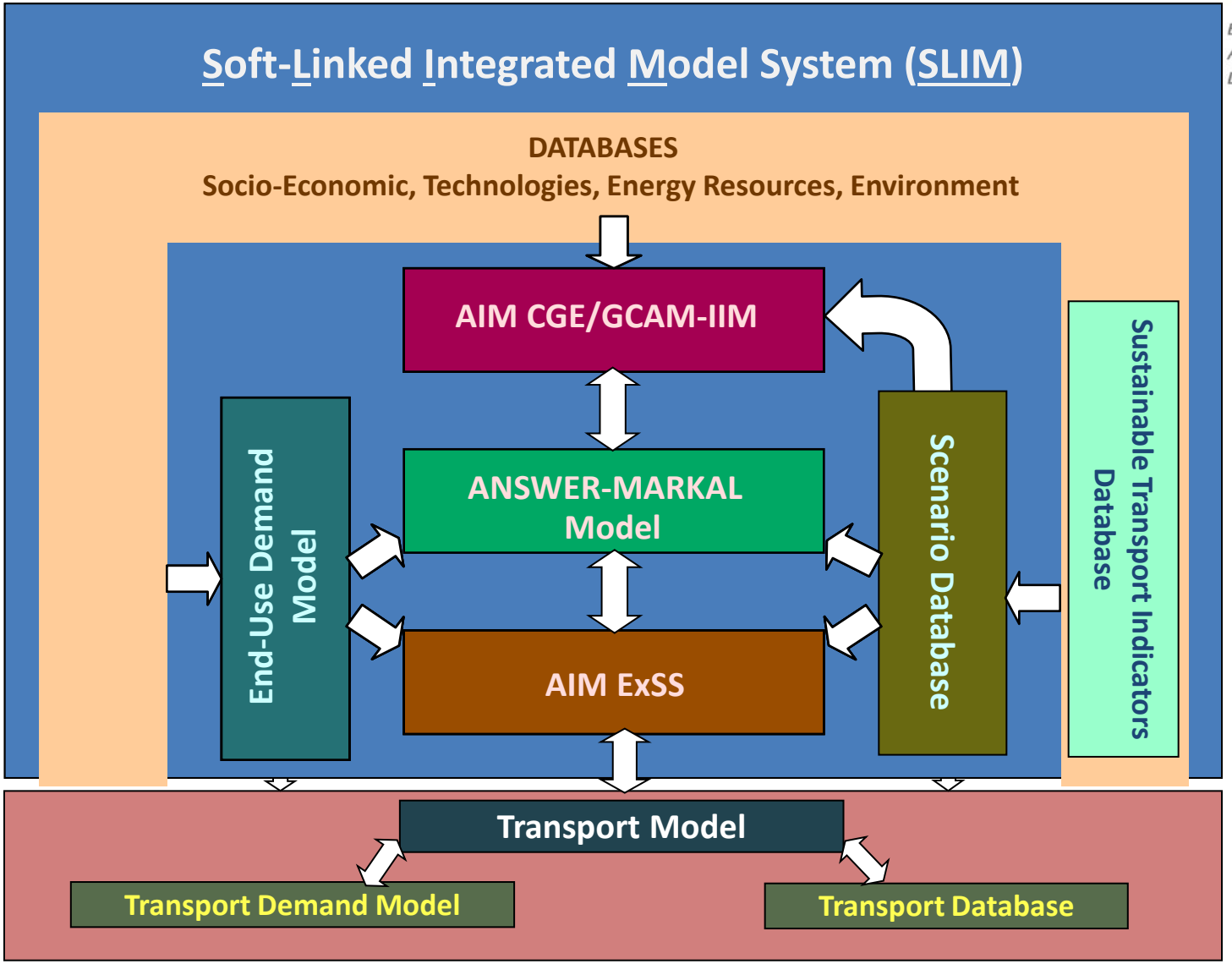


Scenario storylines

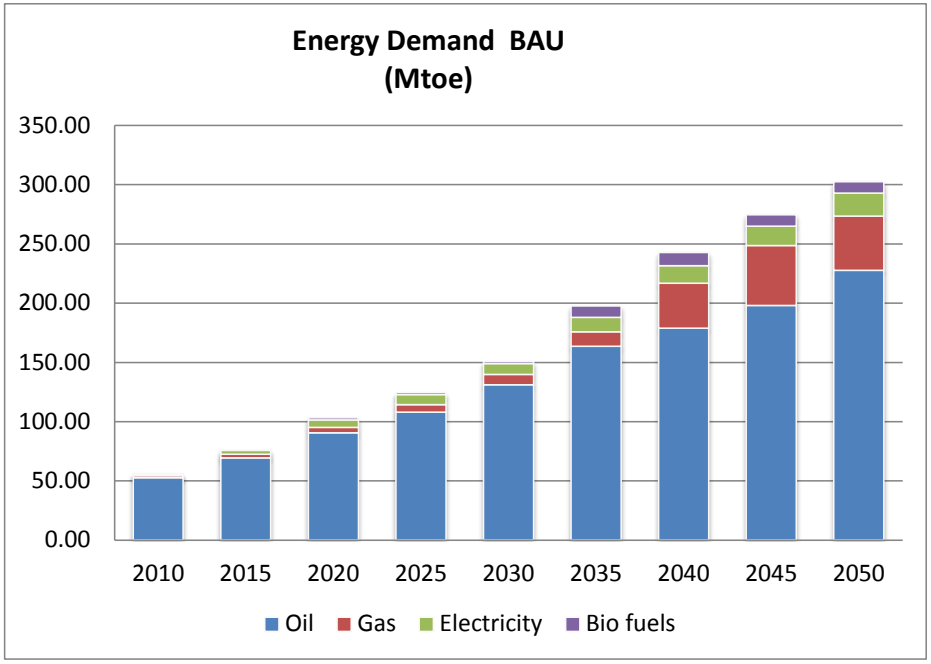
- **BAU Storyline**
  - **Fuel economy norms proposed by BEE in 2011 are implemented**
  - **Increasing incomes** mean that an **increasing weightage for safety, reliability and comfort** from car buyers.
  - Increasing preference for **medium size cars**

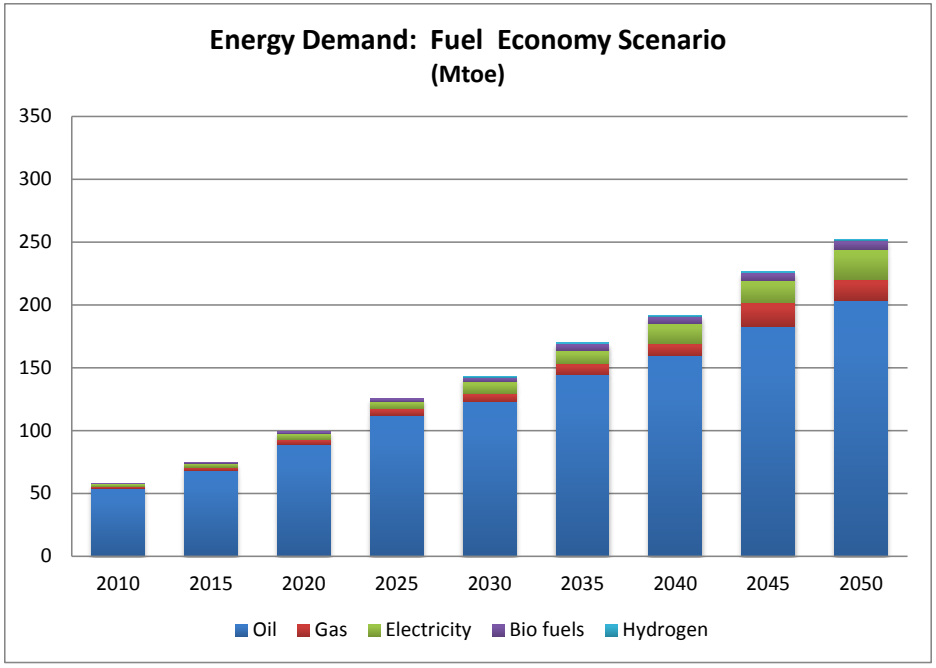
- **Fuel Economy storyline**
  - The vision of **4 lit / 100 km in 2030 according to GFEI**.
  - Similar improvements in engine technologies for 2 wheelers and buses

Soft-Linked Integrated Model



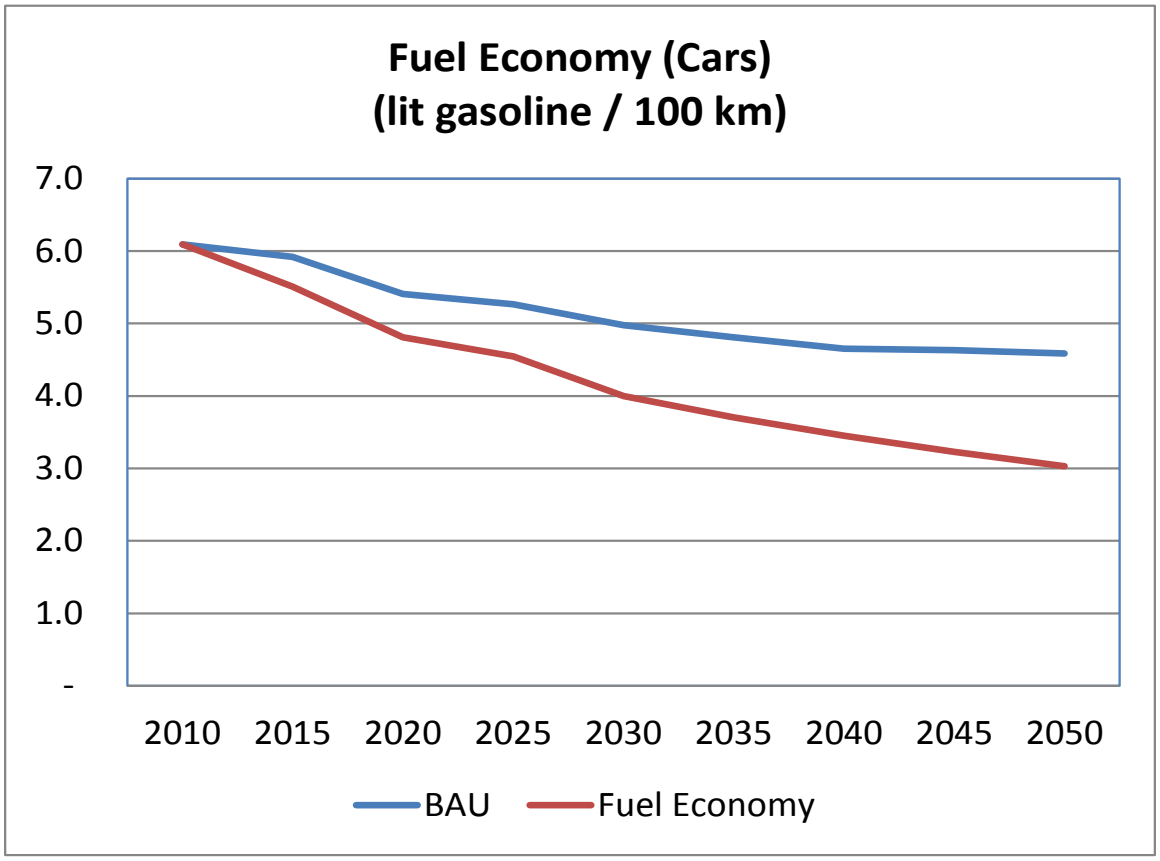
Overall Energy Demand Transport



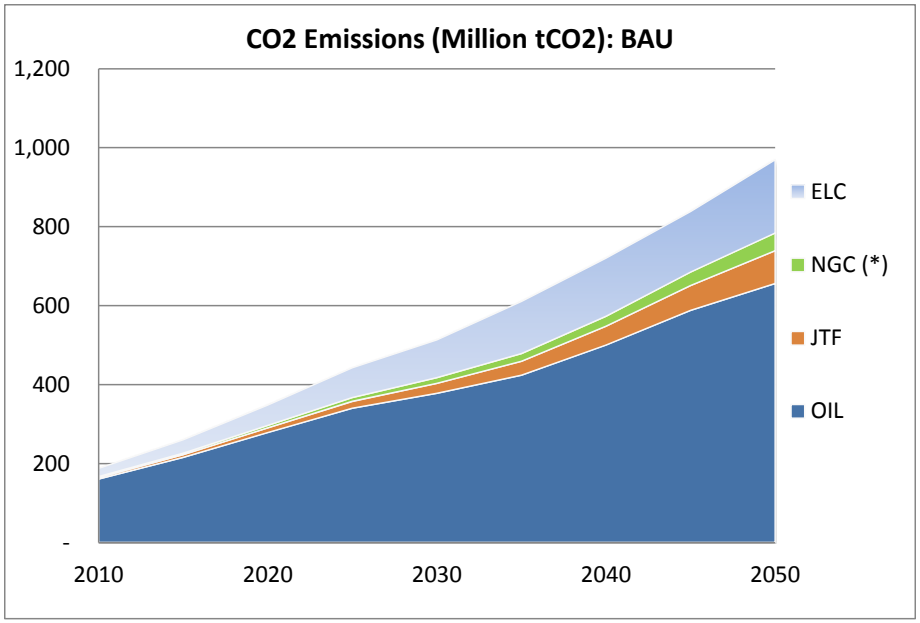


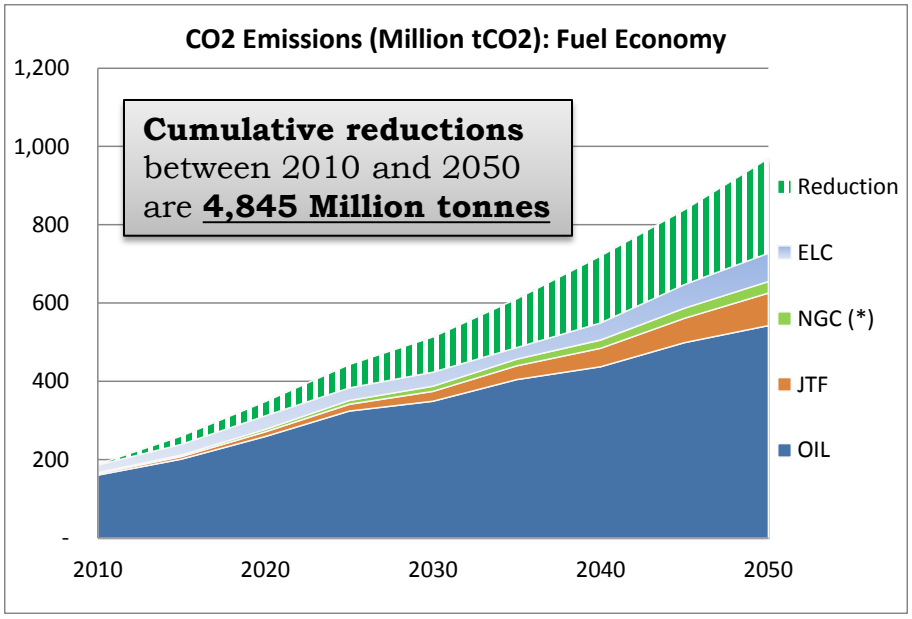
Overall energy savings
from BAU between 2010 and 2050
476 Mtoe

Fuel Efficiency: BAU and Fuel Economy



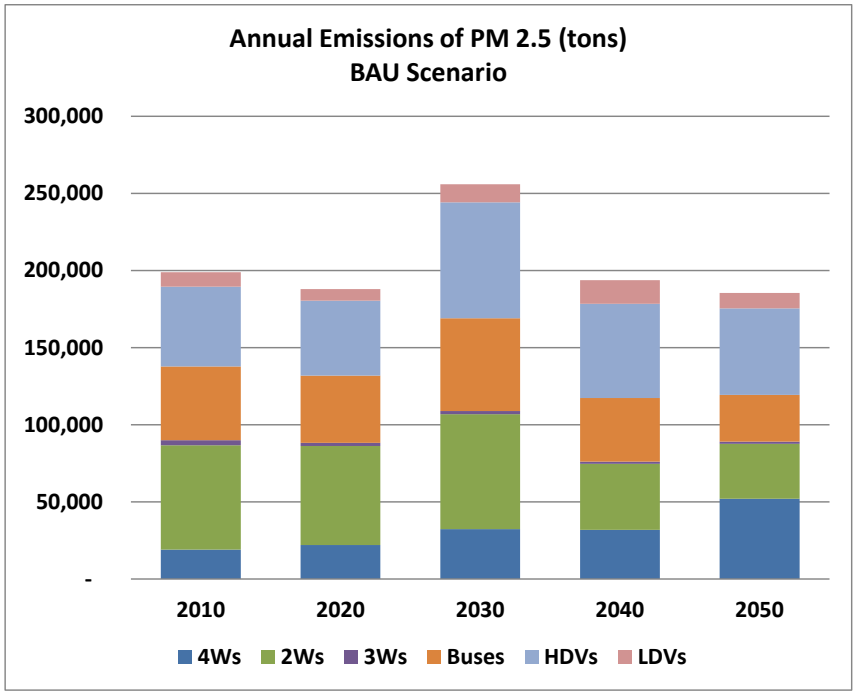
CO2 Emissions transport

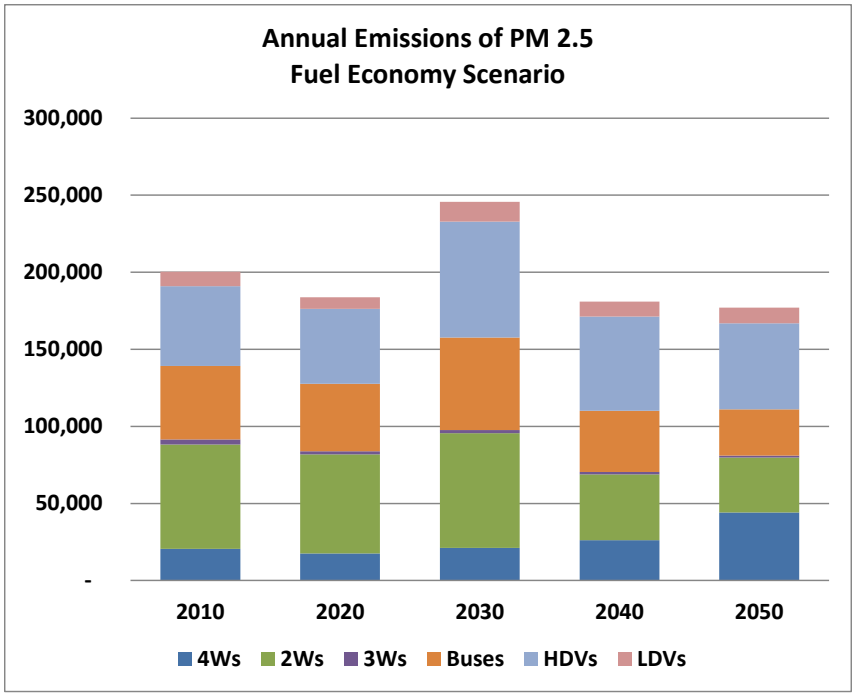




Overall emissions lower by
- 10.6% from BAU in 2020
- 25.0% from BAU in 2050

PM 2.5 Emissions





Emission standards
BS III till 2020,
BS IV till 2030 and
BS V beyond 2030

Conclusions

1. Local Pollutants: More fuel efficient vehicles will reduce lower local pollutants but marginally.
2. Energy Savings: 476 Mtoe of energy savings for period 2010 -2050**(0.08 % of Cumulative GDP at current oil prices)**
3. CO_2 Emissions: Lower by 25% in BAU in 2050
4. Overall impacts will be lower in association with other interventions e.g., sustainable mobility

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Thank You

Questions / Suggestions

विक्रमविनियोगाद्विकासः

IIM AHMEDABAD

DTU